

WHAT IS CLAIMED IS:

1. A composition intended to be applied to the surfaces of freshly placed or freshly demolded mortars and/or concretes, before the beginning of setting, for the purpose of rendering them both synergistic, in order to prevent the evaporation of the water necessary for their setting and for their hardening and to create, on said surfaces, high adhesiveness of the finishing materials, which composition is provided in the form of an aqueous emulsion comprising at least one paraffin wax alone or in combination with at least one other hydrocarbon compound, characterized in that it is composed:
- a) of at least one paraffin wax of petroleum or synthetic origin including, as a mixture, saturated and unsaturated aliphatic hydrocarbons of general formulae  $C_nH_{2n+2}$  and  $C_nH_{2n}$  for which  $n$  is at least equal to 30 and for which the melting point is between  $40^{\circ}C$  and  $75^{\circ}C$ ;
  - b) and/or of at least one hydrocarbon compound which is a linear and/or cyclic hydrocarbon oil of aliphatic and/or naphthenic origin formed of hydrocarbon chains, alone or as a mixture, of general formulae  $C_nH_{2n+2}$  and  $C_nH_{2n}$  for which  $n$  is less than 30; and/or
  - c) of at least one hydrocarbon compound which is an oil formed of at least one ester resulting from the condensation reaction of a saturated and/or unsaturated fatty acid with an alcohol having from one to five hydric functional groups;
  - (d) of at least one latex which is formed of a colloidal aqueous emulsion of at least one polymer and/or copolymer chosen from the group consisting of homopolymers of acrylic acid, of methacrylic

acid and of the esters of these acids, the ester group of which is a  $C_1$  to  $C_{12}$  alkyl group, copolymers of acrylic acid, of methacrylic acid and/or of the esters of these acids, the ester group of which is a  $C_1$  to  $C_{12}$  alkyl group, copolymers of vinyl and of acrylic acid or of methacrylic acid, copolymers of vinyl and of  $C_1$  to  $C_{12}$  esters, copolymers of acrylic or methacrylic acid, copolymers of acrylic acid or of methacrylic acid and of acrylic or methacrylic esters, styrene/acrylic or methacrylic copolymers, copolymers of ethylene and of vinyl acetate, copolymers of ethylene and of acrylic or methacrylic acid, acrylic/urethane copolymers and styrene/butadiene copolymers;

e) of at least one pulverulent filler of inorganic or organic origin.

2. The composition as claimed in claim 1, characterized in that the paraffin wax is chosen from the group consisting of alkanes and/or alkenes, taken alone or as a mixture, which are saturated and/or unsaturated hydrocarbons of petroleum or synthetic origin of general formulae  $C_nH_{2n+2}$  and  $C_nH_{2n}$  in which  $n$  takes a value preferably of between  $30 \leq n \leq 120$ .

3. The composition as claimed in claims 1 and 2, characterized in that the paraffin wax has a melting point preferably of between  $50^\circ\text{C}$  and  $70^\circ\text{C}$ .

4. The composition as claimed in any one of claims 1 to 3, characterized in that the paraffin wax has a density of between 0.85 and 0.95 and preferably of between 0.88 and 0.92.

5. The composition as claimed in any one of claims 1 to 4, characterized in that the other hydrocarbon compound (b) and/or hydrocarbon compound (c)

accompanying the compound (a) which is the paraffin wax is chosen from the group consisting of natural or synthetic hydrocarbon waxes and/or oils.

- 5     6.     The composition as claimed in any one of claims 1 to 5, characterized in that the hydrocarbon compound of type (b) is a hydrocarbon oil of general formulae  $C_nH_{2n+2}$  and/or  $C_nH_{2n}$  in which n preferably takes a value of between 10 and 25.

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7.     The composition as claimed in any one of claims 1 to 6, characterized in that the hydrocarbon compound of type (b) is chosen from hydrocarbon oils having a kinematic viscosity of between 5 and 500 mm<sup>2</sup>/s.

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8.     The composition as claimed in any one of claims 1 to 7, characterized in that the hydrocarbon compound of type (b) is chosen from hydrocarbon oils having a density of between 0.83 and 0.97.

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9.     The composition as claimed in any one of claims 1 to 8, characterized in that the hydrocarbon compound of type (c) is an oil formed of at least one ester resulting from the condensation reaction of a saturated and/or unsaturated fatty acid chosen from the group of the C<sub>8</sub> to C<sub>24</sub> fatty acids with a mono-, di- or trihydric alcohol.

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10.     The composition as claimed in claim 9, characterized in that the fatty acids are chosen from the group consisting of caprylic, capric, lauric, myristic, palmitic, stearic, arachidic, behenic, lignoceric, palmitoleic, oleic, gadoleic, erucic, linoleic, linolenic and isolinolenic acids.

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11.     The composition as claimed in either one of claims 9 and 10, characterized in that the alcohols having from one to five hydric functional groups participating in the preparation of the hydrocarbon compound of type

(c) which is an oil formed of at least one ester are chosen from the group consisting of C<sub>2</sub> to C<sub>20</sub> alkanols and alkenols.

5 12. The composition as claimed in claim 11, characterized in that the monohydric alcohol is chosen from the group consisting of ethanol, propanol, butanol, pentanol, stearyl alcohol and oleyl alcohol, the dihydric alcohol is chosen from the group  
10 consisting of propanediol, butanediol, pentanediol, hexanediol, heptanediol, octanediol, nonanediol, decanediol, undecanediol and dodecanediol, and other dihydroxyalkanes or -alkenes, the trihydric alcohol is chosen from the group consisting of glycerol,  
15 butanetriol, pentanetriol, hexanetriol, heptanetriol, octanetriol, nonanetriol, decanetriol, undecanetriol, dodecanetriol and other trihydroxyalkanes or -alkenes, propane-1tri-2di-ol.

20 13. The composition as claimed in any one of claims 1 to 12, characterized in that the pulverulent inorganic filler (e) is chosen from the group consisting of calcium carbonate, kaolin, alumina, pyrogenic or nonpyrogenic silica, silica fume and barium sulfate,  
25 used alone or as a mixture.

14. The composition as claimed in claim 13, characterized in that the pulverulent inorganic filler has a median particle size of between 1 and 100 µm and  
30 a distribution of between 0 µm and 300 µm.

15. The composition as claimed in either one of claims 13 and 14, characterized in that the pulverulent inorganic filler has a BET specific surface of at least  
35 1 m<sup>2</sup>/g and preferably of between 20 m<sup>2</sup>/g and 700 m<sup>2</sup>/g.

16. The composition as claimed in any one of claims 1 to 12, characterized in that the pulverulent organic filler (e) is chosen from the group of the powders

formed of polymers, copolymers, elastomers, thermoplastics or thermosets.

17. The composition as claimed in any one of claims 1  
5 to 15, characterized in that:

- 10 - the component (a), formed of at least one paraffin wax, is present in said compositions in a proportion of 2% to 90% by weight, preferably of 5% to 60% by weight and very preferably of 5% to 40% by weight;
- 15 - the component (b), formed of at least one hydrocarbon compound, is present in said compositions in a proportion of 0% to 90% by weight, preferably of 8% to 40% by weight and very preferably of 9% to 30% by weight;
- 20 - the component (c), which is a hydrocarbon compound different from (b), is present in said compositions in a proportion of 0% to 90% by weight, preferably of 10% to 50% by weight and very preferably of 15% to 40% by weight;
- 25 - the component (d), which is at least one latex formed of at least one polymer and/or copolymer as an emulsion in water, is present in said compositions in a proportion of 10% to 45% by weight of solids content and preferably of 15% to 30 35% by weight of solids content;
- 35 - the component (e), which is formed of at least one pulverulent filler of inorganic or organic origin, is present in said compositions in a proportion of 0.01% by weight to 10% by weight and preferably of 0.02% by weight to 5% by weight;
- and water: q.s. for 100% by weight.

18. The composition as claimed in any one of claims 1 to 15, characterized in that it is composed:

- 5       - of 2% to 90% by weight of a component (a) in the solids content state formed of at least one paraffin wax of petroleum or synthetic origin including, as a mixture, saturated and unsaturated aliphatic hydrocarbons of general formulae  $C_nH_{2n+2}$  and  $C_nH_{2n}$  for which n is at least equal to 30 and  
10       for which the melting point is between 40°C and 75°C;
- 15       - of 5% to 90% by weight of a component (b) formed of at least one linear and/or cyclic hydrocarbon oil of aliphatic and/or naphthenic origin which are hydrocarbon chains, alone or as a mixture, of general formulae  $C_nH_{2n+2}$  and  $C_nH_{2n}$  for which n is less than 30; and/or
- 20       - of 5% to 90% by weight of a component (c) comprising at least one oil formed of at least one ester resulting from the condensation reaction of a saturated and/or unsaturated fatty acid with a mono-, di- or trihydric alcohol;  
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- 30       - of 10% to 45% by weight of component (d) comprising at least one latex formed of a colloidal aqueous emulsion of at least one polymer;
- 35       - of 0.01% by weight to 10% by weight of a component (e) formed of at least one pulverulent inorganic filler with a BET specific surface at least equal to 1 m<sup>2</sup>/g;
- and of water: q.s. for 100% by weight.

19. The composition as claimed in claim 18, characterized in that it is composed:

- preferably of 5% to 60% by weight and very preferably of 5% to 40% by weight of the component (a);
- 5 - preferably of 8% to 40% by weight and very preferably of 9% to 30% by weight of the component (b); and/or
- 10 - preferably of 10% to 50% by weight and very preferably of 15% to 40% by weight of the component (c);
- and preferably of 15% to 35% by weight of solids content of the component (d);
- 15 - and preferably of 0.02% to 5% by weight of the component (e);
- and of water: q.s. for 100%.

20 20. The composition as claimed in either one of claims 18 and 19, characterized in that the ratio by weight, as dry active material, of the total of the oils and of the paraffin wax present is at least equal to 0.25, is  
25 preferably at least equal to 0.63 and is very preferably between 0.64 and 9.

30 21. The composition as claimed in any one of claims 1 to 20, characterized in that said compositions, in the emulsion form, have a dry matter content of between 10% by weight and 60% by weight and preferably of between 30% by weight and 50% by weight.

35 22. A process for the preparation of the composition as defined in any one of claims 1 to 21, characterized in that it comprises the successive stages of introduction of the various components into a preparation region subjected to stirring, the contents of which can be heated and/or cooled, these stages

being:

- 5 i) the introduction into said region, according to the calculated amount, of the water necessary to create the emulsion and then optionally the introduction of an emulsifying agent, the first mixture being subjected to vigorous stirring during the time needed to produce a homogeneous medium;
- 10 ii) the introduction, according to the calculated amounts, of the mixture of the hydrocarbon compounds of the components (b) and/or (c), forming a second mixture, which is subjected to the same vigorous stirring during the time needed  
15 to produce an emulsion;
- 20 iii) the introduction, according to the calculated amount and with gentle stirring, of the paraffin wax into the second mixture:
  - heated beforehand to a temperature sufficient to cause the paraffin wax to melt and to convert the paraffin wax into the emulsion state, when the paraffin wax is introduced in  
25 the form of a very fine powder; or
  - at ambient temperature, when the paraffin wax is introduced in the form of an aqueous emulsion;  
30and maintenance of gentle stirring during the prolonged time needed to form the emulsion, with optional cooling of the emulsion;
- 35 iv) the introduction into the mixture resulting from iii), according to the calculated amount and with gentle stirring, of the component (d), which is the latex, subjected to gentle stirring during the time needed to produce the aqueous emulsion formed



- of the components (a), (b), (c) and (d);
- v) the introduction into the emulsion resulting from iv), according to the calculated amount and with vigorous stirring, of the component (e), which is the inorganic filler;
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- vi) and then subjection of the emulsion resulting from the second mixture converted to an aqueous emulsion resulting from v) to gentle stirring for a prolonged time in order to homogenize the aqueous emulsion formed comprising all the components.
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23. The application of the composition as defined in any one of claims 1 to 21 in protecting against evaporation of water and increasing the adhesion of the surfaces of freshly placed or freshly demolded mortars and/or concretes by spraying said compositions, as aqueous emulsions, over said surfaces in a proportion of a working load deposited per unit of surface area of between 50 g/m<sup>2</sup> and 150 g/m<sup>2</sup> in order to achieve complete protection.
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